UNITED STATES PATENT AND TRADEMARK OFFICE

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10/026,583	12/18/2001	Maurilio Cometto	ANDIP002	9533

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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _29 November 2006_.

2a)☐ This action is **FINAL**.　　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-69_ is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-69_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _18 December 2001_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)　　　　　4)☐ Interview Summary (PTO-413)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)　　　　Paper No(s)/Mail Date. _____.
3)☐ Information Disclosure Statement(s) (PTO/SB/08)　　　5)☐ Notice of Informal Patent Application
　　Paper No(s)/Mail Date _____.　　　　　　　　6)☐ Other: _____.

This Action is in regards to the Reply received on 11/29/2006.

Response to Amendment

1.   This action is responsive to the application filed on 11/29/2006. No claims have been added, amended, or cancelled. Therefore claims 1-69 are now pending in the application, and represent a method and apparatus for a "**METHODS AND APPARATUS FOR NETWORK CONGESTION CONTROL**".

Response to argument

2.   Applicants' arguments in the Previous Rejection with respect to **Claims 6-16, 24-36, and 54-62** which were objected to as being dependent upon a rejected based claim and would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims are deemed moot in view of the grounds of rejection below. In light of the prior art references resulting from an updated search, the Examiner respectfully withdraws the allowability of those claims and maintain the rejection of independent claims 1, 22, 44, 63, and 67.

    In response to Applicant's arguments, 37 CFR § 1.11(c) requires applicant to "clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must show the amendments avoid such references or objections."

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-69** are rejected under 35 U.S.C. 102(e) as being anticipated by Fawaz et al

(Fawaz), Patent No. 6,970,424 B2.

Regarding claim 1-69 : Fawaz discloses:

1. (Previously presented) a method for controlling congestion at a network switch (fig. 4,

items A, B, and C), the method comprising:

receiving a flame (fig. 5) having a source identifier field corresponding to a

source node and a destination identifier field corresponding to a destination node,

the frame having been transmitted to the network switch through a first intermediate

switch between the network switch and the source node (column 2, lines 25-35;

column 4, lines 27-33; and column 76, lines 3-11);

characterizing traffic flow at the network switch, wherein the network switch is a

fibre channel switch (column 6, lines 27-35) and

sending a first instruction from the network switch to the first intermediate

switch for the first intermediate switch to control traffic from the source node to the

destination node, wherein the first instruction is based on the operation of

characterizing of traffic flow at the network switch (fig. 4; items A, B, and C; column 4, lines 34-49).

2. (original) The method of claim 1, wherein the first intermediate switch is an edge switch coupled to the source node (fig. 4, items 10, 108, and A.

3. (original) The method of claim 2, wherein the first instruction sent to the first intermediate switch comprises an edge quench frame (fig. 5).

4. (original) The method of claim 3, wherein the edge quench frame has a source identifier field corresponding to the destination node and a destination identifier field corresponding to the source node (fig. 5; column 7, lines 18-30).

5. (original) The method of claim 4, wherein the edge quench frame includes network switch congestion information (column 14, lines 10-17).

6. (previously presented) The method of claim 5, wherein the edge quench frame includes network switch queue level information that indicates whether an optimal queue level has been expected (column 4, lines 49-60).

7. (original) The method of claim 6, wherein the edge quench frame directs the first intermediate switch to control the allowed rate for transmitting from the source node and the destination node by half (column 4, lines 61-67; column 5, lines 1-5; note that the downstream node indicates to the upstream node to reduce the transmission rate by ½, 1/3, or any amount other than specified.

8. (original) The method of claim 7, wherein the first intermediate switch and the network switch axe connected using fibre channel (column 6, lines 27-35).

9. (original) The method of claim 1, wherein the frame was transmitted through a second intermediate switch between the first intermediate switch and the network switch (fig. 4, A, B, and C).

10. (original) The method of claim 9, further comprising:

sending a second instruction from the network to the second intermediate switch to control traffic from the source node to the destination node (column 15, lines 13-20; fig. 4, items A, B, and C).

11, (original) The method of claim 10, wherein the first instruction sent to the first intermediate switch comprises a path quench frame (fig. 5; column 13, lines 3-19).

12. (original) The method of claim 11, wherein the second instruction sent to the second intermediate switch comprises the path quench frame (fig. 5; column 13, lines 3-19).

13. (original) The method of claim 12, wherein the path quench frame has a source identifier field corresponding to the destination node and a destination identifier field corresponding to the source node (fig. 5; column 13, lines 3-19; column 2, lines 25-34).

14. (original) The method of claim 13, wherein the path quench frame includes network switch congestion reformation (column 14, lines 10-17).

15. (original) The method of claim 14, wherein the path quench frame includes network switch queue level information (column 4, lines 49-67).

16. (original) The method of claim 15, wherein the path quench frame directs the first and second intermediate switches to reduce the allowed rate for

transmitting from the source node and the destination node to 0bps (column 4, lines 49-67).

17. (original) The method of claim 1, wherein characterizing traffic flow comprises checking the network switch queue level (column 4, lines 49-67).

18. (original) The method of claim 17, wherein characterizing traffic flow comprises determining whether to transmit path quench or edge quench frames (column 4, lines 49-67).

19. (original) The method of claim 18, wherein path quench frames are transmitted when the queue level exceeds a high threshold (column 4, lines 49-67).

20. (original) The method of claim 19, wherein edge quench frames are transmitted when the queue level is between a high threshold and a low threshold (column 4, lines 49-67).

21. (original) The method of claim 20, wherein the edge quench and path quench frames include a buffer level indicator (column 4, lines 49-67).

22. (previously presented) A method for controlling traffic flow between first and second end nodes through first and second intermediate nodes (column 15, lines 13-20; fig. 4, items A, B, and C), the method comprising:

transmitting a first frame having a source identifier corresponding, to the first end node and a destination identifier corresponding to the second end node, wherein the frame is transmitted at a first intermediate node to a second intermediate node between the first intermediate node and the second cad node (column 15, lines 13-20; column 4, lines 27-33; and column 76, lines 3-11; fig. 4, items A, B, and C);

receiving a second frame that was generated by the second intermediate node, the second flame having a source identifier corresponding to the second end node and a destination identifier corresponding to the first end node, wherein the second frame is received at the first intermediate node and includes instructions for the first intermediate node to adjust the current allowed rate from the first end node to the see, end node (column 2, lines 25-35; column 4, lines 27-33; and column 76, lines 3-11); and

at the first intermediate node, adjusting the current allowed rate from the first end node to the second end node upon receiving the second frame (column 4, lines 49-67).

23. (original) The method of claim 22, wherein the current allowed rate cannot exceed the maximum allowed rate (column 4, lines 61-67; column 5, lines 1-5).

24. (original) The method of claim 22, wherein adjusting the current allowed rate comprises:

determining that the second frame is an edge quench frame (fig. 5; column 7, lines 18-30).

25. (original) The method of claim 24, wherein the current allowed rate is adjusted after it is setermined that the first intermediate node is an edge switch coupled to the first end node (figs. 4 and 5; column 7, lines 18-30).

26. (original) The method of claim 24, wherein the current allowed rate is adjusted after it is determined that the first intermediate node is

coupled to a neighboring node that does not support congestion control nodes (column 15, lines 13-20; fig. 4, items A, B, and C).

27. (original) The method of claim 25, wherein the first end node is a host nodes (column 15, lines 13-20; fig. 4, items A, B, and C).

28. (original) The method of claim 27, wherein the second end node is storage (column 15, lines 13-20; fig. 4, items 106, 108, A, B, and C).

29. (original) The method of claim 25, wherein the first end node is storage (column 15, lines 13-20; fig. 4, items 106, 108, A, B, and C).

30. (original) The method of claim 29, wherein the second end node is a host (column 15, lines 13-20; fig. 4, items 106, 108, A, B, and C).

31. (original) The method of claim 25, wherein the current allowed rate is initially the maximum allowed rate.

32. (original) The method of claim 31, wherein the current allowed rate is divided by two upon receinving an edge quench Frame (figs. 4 and 5; column 7, lines 18-30).

33. (original) The method of claim 32, wherein the current allowed rate increases at a recovery rate (fig. 9, column 10, lines 3-30).

34. (original) The method of claim 33, wherein the recovery rate is dynamically set (fig. 9, column 10, lines 3-30).

35. (original) The method of claim 33, wherein the recovery rate is set based on information contained in the received edge quench frame (figs. 4 and 5; column 7, lines 18-30).

36. (original) The method of claim 35, wherein the recovery rate is set based on an input queue associated with the second intermediate node (column 4, lines 49-67).

37. (original) The method of claim 22, wherein adjusting the current allowed rate comprises:

determining that the second frame is a path quench frame (column 15, lines 13-20; fig. 4, items 106, 108, A, B, and C).

38. (original) The method of claim 37, wherein the current allowed rate is initially the maximum allowed rate (figs. 4 and 5; column 7, lines 18-30).

39. (original) The method of claim 38, wherein the current allowed rate is reduced to 0 bps upon receiving an path quench frame (fig. 5; column 13, lines 3-19).

40. (original) The method of claim 39, wherein the current allowed rate increases at a recovery rate (figs. 4 and 5; column 7, lines 18-30; fig. 9).

41. (original) The method of claim 40, wherein the recovery rate is dynamically set (fig. 9, column 10, lines 3-30).

42, (original) The method of claim 40, wherein the recovery rate is set based on information contained in the received path quench frame (fig. 5; column 13, lines 3-19; fig. 9, column 10, lines 3-30).

43. (original) The method of claim 42, wherein the recovery rate is set based on an input queue associated with the second intermediate node (column 4, lines 49-67).

44. (previously presented) A switch for controlling the traffic flow between a source node and a destitution node, the switch comprising:

a first port for coupling to a first external node (fig. 6, item 317; column6, lines 47-54; column 11, lines 22-40);

a second port for coupling to a second external node (fig. 6, item 317; column6, lines 47-54; column 11, lines 22-40);

a first queue associated with the first port for receiving dam from the first external node being sent to a third node that is reached through the second port and the second external node, the first queue including a first portion for holding data for transmission through the first port and a second portion for holding data for transmission through the second port (column 4, lines 49-67; column 5, lines 1-11); and

a filter coupled to the first queue, the filter configured to receive dam from the first queue and determine whether transmission of the data should be delayed based on information received from and generated by the second node. Inherently A switch such as switch A, B, or C, provides the basic functions of a bridge including filtering of data traffic by MAC address, "learning" of a MAC address based upon a source MAC address of a frame and forwarding of the frame based upon a destination MAC.

45. (Original) The switch of claim 44, further comprising a filter queues, wherein the filter queues are configured to hold data set for delayed transmission (column 4, lines 49-67; column 5, lines 1-11).

46. (original) The switch of claim 45, wherein each filter queue is associated with a flow (column 4, lines 49-67; column 5, lines 1-11).

47. (original) The switch of claim 46, wherein the flow is traffic from a source node to a destination node (column 2, lines 25-35; column 4, lines 27-33; and column 76, lines 3-11).

48. (original) The switch of claim 47, wherein the first queue is a virtual output queue(column 4, lines 49-67; column 5, lines 1-11).

49. (previously presented) The switch of claim 47, wherein each queue is associated with a priority(column 4, lines 49-67; column 5, lines 1-11). .

50. (original) The switch of claim 49, wherein each filter queue is associated with an input port and an output port (column 4, lines 49-67; column 5, lines 1-11).

51. (original) The switch of claim 44, further comprising a rate limiter coupled to a filter queue (column 4, lines 49-67; column 5, lines 1-11).

52. (original) The switch of claim 51, wherein the amount of delay is determined by the rate limited.

53. (original) The switch of claim 52, wherein the rate limiter uses token buckets. Note that using token buckets is inherently used in the art of finding the amount of rate delay.

54. (original) The switch of claim 53, wherein the amount of delay is determined based on information received from the second external node (fig. 4; items A, B, and C; column 4, lines 34-49).

55. (original) The switch of claim 54, wherein the number of tokens allocated to a filter queue associated with a flow is halved upon receipt of an edge quench frame from the second external node identifying the flow (figs. 4 and 5; column 7, lines 18-30).

56. (original) The switch of claim 55, wherein the number of tokens allocated to the filter queue associated with the flow increases at a recovery rate (fig. 9, column 10, lines 3-30).

57. (original) The switch of claim 55, wherein the recovery rate is dynamically determined (fig. 9, column 10, lines 3-30).

58. (original) The switch of claim 55, wherein the recovery rate is set based on second external node queue level information (fig. 9, column 10, lines 3-30).

59. (original) The switch of claim 54, wherein the number of tokens allocated to a filter queue associated with a particular flow is set to zero upon receipt of a path quench frame from the second external node identifying the particular flow (fig. 5; column 13, lines 3-19).

60. (original) The switch of claim 39, wherein the number of tokens allocated to the filter queue associated with the flow increases at a recovery rate (fig. 9, column 10, lines 3-30).

61, (original) The switch of claim 60, wherein the recovery ram is dynamically determined (fig. 9, column 10, lines 3-30).

62. (original) The switch of claim 60, wherein the recovery rate is set based on second external node queue level information (fig. 9, column 10, lines 3-30).

63. (previously presented) An apparatus for controlling congestion, the method comprising:

means for receiving a frame having a source identifier field corresponding to a source node and a destination identifier field corresponding to a destination node, the frame having been transmitted to the network switch through a first intermediate switch between the network switch and the source node(column 2, lines 25-35; column 4, lines 27-33; and column 76, lines 3-11);

means for characterizing traffic flow at the network switch; and means for sending a first instruction from the network switch to the first intermediate switch for the first intermediate switch to control traffic from the source node to the destination node, wherein the first instruction is based on the operation of characterizing of traffic flow at the network switch (fig. 4; items A, B, and C; column 4, lines 34-49)..

64. (original) The apparatus of claim 63, wherein the first intermediate switch is an edge switch coupled to the source node (figs. 4 and 5; column 7, lines 18-30).

65. (original) The apparatus of claim 64, wherein the first instruction sent to the first intermediate switch comprises an edge quench frame (figs. 4 and 5; column 7, lines 18-30).

66. (original) The apparatus of claim 65, wherein the edge quench frame has a source identifier field corresponding to the destination node and a destination identifier field corresponding to the source node (figs. 4 and 5; column 7, lines 18-30).

67. (previously presented) A computer readable medium for controlling congestion, the computer readable medium comprising:

computer code for receiving a frame having a source identifier field corresponding to a source node and a destination identifier field corresponding to a destination node, the frame having been transmitted to the network switch through a first intermediate switch between the network switch and the source node (column 2, lines 25-35; column 4, lines 27-33; and column 76, lines 3-11);

computer code for characterizing traffic flow at the network switch; and

computer code for sending a first instruction from the network switch to the first intermediate switch for the first intermediate switch to control traffic from the source node to the destination node, wherein the first instruction is based on the operation of characterizing of traffic flow at the network switch (fig. 4; items A, B, and C; column 4, lines 34-49).

68. (original) The computer readable medium of claim 67, wherein the first intermediate switch is an edge switch coupled to the source node (figs. 4 and 5; column 7, lines 18-30).

69. (original) The computer readable medium of claim 68, wherein the first instruction sent to the first intermediate switch comprises an edge quench frame (figs. 4 and 5; column 7, lines 18-30).

Conclusion

6.   **THIS ACTION IS MADE NON-FINAL.** Any inquiry concerning this

communication or earlier communications from examiner should be directed to Jude

Jean-Gilles whose telephone number is (571) 272-3914. The examiner can normally be

reached on Monday-Thursday and every other Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, David Wiley, can be reached on (571) 272-3923. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (571) 272-

9000.

Jude Jean-Gilles

Patent Examiner

Art Unit 2143

SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

JJG

February 11, 2007